Exploration Capabilities

NextSTEP Phase 2 Environmental Control Life Support Systems Modularity Study (NSTEP ECLSS)

Completed Technology Project (2015 - 2021)

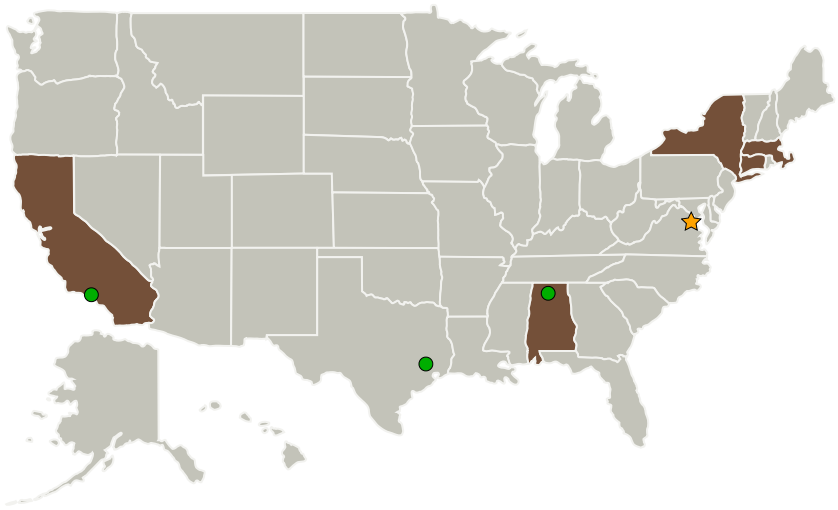
Project Introduction

The objectives of the Environmental Control and Life Support Systems (ECLSS) Modularity Phase 2 study are to add activities that are needed to evolve ECLSS from supporting an initial cislunar habitat toward a habitat for deep space travel. This program will develop an ECLSS architecture for a cislunar habitat that is evolvable to support closed-loop, earth independent, deep space exploration applications; generate a dynamic modular ECLSS model; develop a fully functional prototype of the selected control architecture; support the development of ECLSS Standards and Interfaces; leverage the state-of-the-art intelligent technologies to enhance ECLSS performance, safety and reliability; develop and fabricate a series of demonstration pallets; and develop and fabricate an Air Revitalization System (ARS) Prototype.

Anticipated Benefits

This NextSTEP Phase 2 partnership with Collins Aerospace Systems will continue to evolve the ECLSS needed for a habitat in cislunar space that can be used to support missions to Moon and deep space.

Primary U.S. Work Locations and Key Partners



NextSTEP Phase 2 Environmental Control Life Support Systems Modularity Study

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Organizations Performing Work	Role	Type	Location
★NASA Headquarters(HQ)	Lead Organization	NASA Center	Washington, District of Columbia
●Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
●Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
●Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama
UTC Aerospace Systems(UTAS)	Supporting Organization	Industry	Connecticut

Primary U.S. Work Locations	
Alabama	California
Connecticut	Massachusetts
New York	

Project Website:

https://www.nasa.gov/nextstep

Organizational Responsibility

Responsible Mission Directorate:

Exploration Systems Development Mission Directorate (ESDMD)

Lead Center / Facility:

NASA Headquarters (HQ)

Responsible Program:

Exploration Capabilities

Project Management

Program Director:

Christopher L Moore

Project Manager:

Marlon R Cox

Principal Investigators:

Walter F Schneider
Daniel J Barta
Mark Jernigan

Co-Investigators:

Jay L Perry
Daniel J Barta
Miriam J Sargusingh

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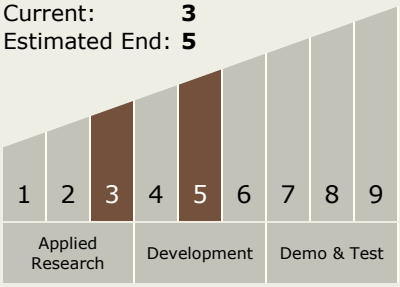
Completed Technology Project (2015 - 2021)

Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **5**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.1 Atmosphere Revitalization

Target Destination

Mars

Supported Mission Type

Planned Mission (Pull)